and *Cratogeomys* are represented in the United States; the former, with seven species and five sub-species, scarcely extends across our southern border; the latter, with seven species and one sub-species, is mainly Mexican, one species, however, ranging northward over southeastern New Mexico and northwestern Texas. *Macrogeomys* is known only from Costa Rica; *Heterogeomys* and *Orthogeomys* occupy separate areas in southern Mexico and Guatemala; *Pappogeomys*, *Platygeomys* and *Zygogeomys* occur in central and western Mexico, the latter being known only from a very restricted area in the State of Michoacan.

The chapters on the Morphology of the Skull and the Dental Armature bring into strong relief many points in relation to changes of structure, due to age and growth, which have heretofore been only lightly touched upon, and especially the influence of the masseter muscle upon the general shape of the skull in adult life. The facts here presented may well be studied with care and profit by students of not only the mammals of to-day, but of the extinct forms as well. The skull is considered not only as a whole, but its individual bones are treated in detail, with cuts showing the skull sectionized, and young skulls in comparison with old ones of the same species. The memoir thus illustrates some of the best work and the tendencies of the 'new school' in recent mammalogy. In fact, no similar group of mammals has before been treated in such exhaustive detail, or from a morphological standpoint, or with such admirable profusion of illustration.

J. A. ALLEN.

AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK.

The Planet Earth. RICHARD A. GREGORY, 16 mo, pp. 108. Macmillan & Co., New York. Price 60 cents.

This little book is called 'An Astronomical Introduction to Geography.' In the preface the reader is promptly informed that in class books on Astronomy and Geography the subject of the earth considered as a planet is treated inadequately and unscientifically. The author expresses his hope that his treatment, which, by inference, is both adequate and scientific, may be the means of reviving the 'Observational Astronomy of pre-telescopic times.' Just why the telescope should be tabooed, or why it is less 'scientific' than strings with beads strung on them, does not clearly appear. It is quite evident, however, that the author wishes to restore what is sometimes called the 'historical' method of presentation and instruction, according to which the student is expected to traverse the path along which mankind has slowly toiled in order to reach conclusions which in the present state of our knowledge are often quickly attained by perfectly logical processes. There is, also, generally involved in this method, the erroneous assumption that a student can, in the short time available for his training in science and scientific methods, re-discover for himself all the great facts and principles which are the fruit of ages of intellectual activity, if only he has a few simple appliances at hand and is started in the right direction. This is a very large error, and it is not desirable to pursue it farther at this point. Admitting, therefore, and no one will venture to deny this, that much can be learned by a proper study of the apparent motions of the heavenly bodies, and that young people should be led to make such study before finishing or even beginning their study of the earth, as it is presented in the so-called unscientific treatment in Astronomy and Geography, it is yet extremely doubtful if the book now under consideration will be of real value to them.

The first chapter, which forms a considerable part of the whole, is devoted to 'the constellations.' The continued fixedness of

the North Star at one point in the sky is established by a quotation from Shakespeare, but there is an intimation later that the distinguished poet was possibly a little weak in his Astronomy. The author is very fond of bolstering up quite generally accepted scientific theories by poetic quotations, and even in the case of the Law of Gravitation, against which there can hardly be said to be any serious rebellion at the present time, he finds it desirable to repeat that bit of nonsense beginning,

"The very law that moulds a tear,"

for the existence of which not even poetic license furnishes excuse.

In the discussion of the size and mass of the earth, as elsewhere, great unevenness is shown. On one page is a diagram of a complicated piece of triangulation by the British Ordnance Survey, including the base-line on Salisbury Plain, and on that opposite is one explaining angular measure and terrestrial latitude by opening the legs of a pair of compasses. In the discussion of latitude there are many errors, and a beginner will be greatly helped by not reading it. There is a good deal about the Zodiac, with incidental references to 'mansions in the sky' and the emotions with which the first men witnessed the first Setting of the Sun, 'to whom he was dead,' together with a brief account of how their hopes were buoyed up and their fears calmed by the appearance of the 'Evening Star.' See wood cut on opposite page representing Venus shining upon a rural scene, including a village of at least twenty houses, a church with a tall spire tipped with a cross, and calming the fears of a farmer driving a yoke of oxen drawing a cart on which is probably a half ton of hay or grain or something of the sort. This is a marvellous development for a single day. At this point more poetry appears, and the rigorously scientific treatment is enhanced in value by numerous references to Lucifer, Apollo, etc., etc.

To illustrate the phases of Venus, which, by the way, hardly belong to pre-telescopic astronomy, the author shows a picture in which a lamp represents the sun, and a comely young woman with quite-up-to-date leg-of-mutton sleeves is represented as standing in four positions, in front of, behind, on the right and on the left of the luminary as viewed by the reader. Unfortunately it has been thought necessary to represent this young lady as looking squarely at the sun in all of the four positions, and thus what is intended to simplify the explanation of one phenomenon proves to be much more effective in establishing a very erroneous conclusion respecting another. And this is not the only happening of this kind in the barely one hundred pages of the book. To one who only 'skims' through it, it is reminiscent of the days of a quarter or half century ago, when 'Astronomy and the Use of the Globes' was a favorite subject in young ladies' seminaries. A more careful examination shows, however, that it is not so harmless as might at first appear, and although it unquestionably contains some good features it is quite safe to predict that the 'inadequate and unscientific' treatment of the subject found in good, modern text-books of Astronomy and Geography will continue, for the present, to receive the confidence of both instructors and students. T. C. M.

Biological Lectures Delivered at the Marine Biological Laboratory of Wood's Holl. 8vo, 242 pp. Boston, Ginn & Co. 1894.

In no way, short of an actual sojourn at the Wood's Holl Laboratory, is it possible to secure a better idea of the scope and character of the opportunities afforded by this institution than by the perusal of this series of selected lectures. Wood's Holl is at once the 'finishing school' of the American biological student, and the rallying point